Attachment O

Toxics Management Plan (TMP)

- **TMP Justification Memorandum**
- **Acute/ Chronic Toxicity Endpoint Spreadsheets (55, 62 MGD)**

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Blue Ridge Regional Office

3019 Peters Creek Road Roanoke, VA 24019

SUBJECT: Toxics Management Plan Justification for Western Virginia Water Authority WPCP VPDES Permit No. VA0025020

TO: Permit File

FROM: Becky L. France, Environmental Engineer Senior

DATE: November 20, 2008

INTRODUCTION:

The Western Virginia Water Authority (WVWA) owns and operates the WVWA Water Pollution Control Plant, which serves the cities of Roanoke and Salem, the counties of Roanoke and Botetourt, and the Town of Vinton. Table 1 summarizes the facility information. The permit for this facility was reissued on May 14, 2004, and includes a Toxics Management Program (TMP) for outfall 001, which is also summarized in Table 1.

TOXICITY EVALUATION / DISCUSSION:

Tables 2 and 3 include a compilation of the acute and chronic toxicity testing data since May of 2004. Following completion of the upgrade to 55 MGD in March of 2008, the facility began quarterly toxicity testing using Ceriodaphnia dubia and Pimephales promelas. For outfall 001, the facility has completed 15 valid acute and 15 valid chronic toxicity testing events. The results of the acute tests indicated that the effluent was not acutely toxic to Ceriodahnia dubia or the fathead minnows. In the chronic tests, the survival or reproduction of the Ceriodaphnia dubia was not affected in any of the effluent test concentrations. Also, the effluent did not adversely affect the survival or growth of the fathead minnows.

Guidance Memorandum 00-2012 designates criteria to allow testing of only one species per test type rather than two species. The criteria designate one of two conditions that need to be met: (1) the average percent survival in 100% effluent for all the acceptable acute tests during a permit term with a particular species is $\geq$ 100, or (2) the average percent survival in 100% effluent for all of the acceptable chronic tests during a permit term with a particular species is $\geq$ 80% and the secondary endpoint for reproduction or growth is an NOEC=100%. If the criteria indicate that there is no possibility for toxicity from tests with the evaluated species, annual testing with the other tested species should be sufficient.

During the previous permit term, Pimephales promelas met the percent survival criteria in 100% effluent for the acute tests, and Ceriodaphnia dubia met the percent survival criteria in 100% effluent for the chronic tests. Therefore, the least sensitive species meeting the criteria for each test type are not deemed necessary.

Only one species (most sensitive) will be required for acute and chronic toxicity testing. The facility should continue annual compliance monitoring using Ceriodaphnia dubia for the acute toxicity tests and Pimephales promelas for the chronic toxicity tests. The toxicity testing NOEC endpoint calculations are included on the attached spreadsheet.

Table 1. **FACILITY INFORMATION**

FACILITY: Western Virginia Water Authority WPCP

LOCATION: 1502 Brownlee Avenue, S.E., Roanoke, Virginia

VPDES PERMIT NUMBER: VA0025020 **Current Expiration Date:** 02/18/09

SIC CODE/DESCRIPTION: 4952/Wastewater Treatment Plant

OUTFALL/FLOWS (MGD): **Outfall 001** = 55 MGD; 62 MGD (Proposed)

RECEIVING STREAM/CRITICAL FLOWS/IWC:

Receiving Stream:	Roanoke River	7Q10 = 23 MGD
River Basin:	Roanoke River	1Q10 = 20 MGD
Subbasin:	Roanoke River	30Q5 = 35 MGD
Section:	6	Harmonic mean = 97 MGD
Class:	IV	IWC = 71% (55 MGD Facility)
Special Standards:	6.5 – 9.5 S.U.	IWC = 73% (62 MGD Facility)

WASTEWATER TREATMENT:

The 42 MGD facility consists of screening, grit removal, primary sedimentation, secondary treatment by activated sludge, secondary clarification, phosphorous removal, nitrification aeration, nitrification clarification, polymer addition, rapid mixing, flocculation, coagulation, sedimentation, filtration, chlorination, dechlorination, and post-aeration; sludge is thickened, anaerobically digested, stored in on-site lagoons, and land applied by contract operator.

TMP REQUIREMENTS (2/04-2/09)

OUTFALL 001

42 MGD Facility: Quarterly acute 48-hour static toxicity testing with Ceriodaphnia dubia and Pimephales promelas and 7-day larval survival and growth chronic toxicity with Ceriodaphnia dubia and Pimephales promelas, using 24-hour flow-proportioned composite samples until four quarters of testing are completed. Then annual acute and chronic toxicity testing using the most sensitive species as approved by the DEQ staff.

55 MGD/ 62 MGD Facility: Commencing within 90 days from the issuance of the Certificate to Operate the upgraded facility, the permittee shall begin conducting quarterly acute and chronic toxicity testing commencing within 90 days from the issuance of the Certificate to Operate upgraded facility. Acute 48-hour static toxicity testing with Ceriodaphnia dubia and Pimephales promelas and 7-day larval survival and growth chronic toxicity with Ceriodaphnia dubia and Pimephales promelas, using 24-hour flow-proportioned composite samples.

Table 2 Acute Test Results for WVWA WPCP; VA0025020, Outfall 001

Test Date	Test Organism	LC_{50} (%)	% Survival in 100% effluent	Testing Laboratory
06/2004 Q1	C. dubia	> 100	100	Olver Labs
	P. promelas	>100	100	
10/2004 Q2	C. dubia	> 100	100	Olver Labs
	P. promelas	>100	100	
12/2004 Q3	C. dubia	> 100	100	Olver Labs
	P. promelas	>100	100	
02/2005 Q4	C. dubia	>100	100	Olver Labs
	P. promelas	>100	100	
11/2005 A1	C. dubia	>100	100	Olver Labs
6/2006 A2	C. dubia	> 100	95	Olver Labs
6/2007 A3	C. dubia	>100	100	Olver Labs
5/2008 Q1	C. dubia	>100	90	Olver Labs
	P. promelas	>100	100	
7/2008 Q2	C. dubia	>100	100	Olver Labs
	P. promelas	>100	100	

Notes:
Q = quarter A= annual

Table 3 Chronic Toxicity Test Results for WVWA WPCP VA0025020, Outfall 001

Test Date	Test Organism	NOEC % Survival	NOEC %Repro-Growth	TUc	% Survival in 100% Effluent	Testing Laboratory
6/2004 Q1	C. dubia	100	100	1.0	100	Olver Labs
	P. promelas	100	100	1.0	100	
10/2004 Q2	C. dubia	100	100	1.0	100	Olver Labs
	P. promelas	100	100	1.0	100	
12/2004 Q3	C. dubia	100	100	1.0	100	Olver Labs
	P. promelas	100	100	1.0	100	Olver Labs
02/2005 Q4	C. dubia	100	100	1.0	100	Olver Labs
	P. promelas	100	100	1.0	97.5	Olver Labs
11/2005 A1	P. promelas	100	100	1.0	100	Olver Labs
6/2006 A2	P. promelas	100	100	1.0	92.5	Olver Labs
6/2007 A3	P. promelas	100	100	1.0	92.5	Olver Labs
5/2008 Q1	C. dubia	100	100	1.0	90	Olver Labs
	P. promelas	100	100	1.0	100	
7/2008 Q2	C. dubia	100	100	1.0	100	Olver Labs
	P. promelas	Invalid				
9/2008 Q2	P. promelas	100	100	1.0	100	Olver Labs

Notes:

Q = quarter A= annual

Spreadsheet for determination of WET test endpoints or WET limits

Excel 97
Revision Date: 12/05/01
File: WETLIM10.xls
(MIX.EXE required also)

Enter data in the cells with blue type:

Entry Date:	10/28/08
Facility Name:	WVWA WPCP
VPDES Number:	VA0025020
Outfall Number:	1

Plant Flow:	55	MGD
Acute 1Q10:	20	MGD
Chronic 7Q10:	23	MGD

Are data available to calculate CV? (Y/N)	N	(Minimum of 10 data points, same species, needed)
Are data available to calculate ACR? (Y/N)	N	(NOEC<LC50, do not use greater/less than data)

Go to Page 2
Go to Page 3

Acute Endpoint/Permit Limit — Use as LC_{50} in Special Condition, as TUa on DMR

ACUTE	100% =	NOAEC	LC_{50} =	NA	% Use as	NA	TUa

ACUTE WLAa 0.40909091 — Note: Inform the permittee that if the mean of the data exceeds this TUa: 1.0 a limit may result using WLA.EXE

Chronic Endpoint/Permit Limit — Use as NOEC in Special Condition, as TUc on DMR

CHRONIC	2.074196825	TU_c	NOEC =	49	% Use as	2.04	TU_c
BOTH*	4.090909191	TU_c	NOEC =	25	% Use as	4.00	TU_c
AML	2.074196825	TU_c	NOEC =	49	% Use as	2.04	TU_c

ACUTE WLAa,c	4.09090909	Note: Inform the permittee that if the mean
CHRONIC WLAc	1.41818182	of the data exceeds this TUc: 1.0
* Both means acute expressed as chronic		a limit may result using WLA.EXE

% Flow to be used from MIX.EXE

Difuser /modeling study?

Enter Y/N	n		
Acute	1	:1	
Chronic	1	:1	

IWC_a	73.3333333	%	Plant flow/plant flow + 1Q10
IWC_c	70.5128205	%	Plant flow/plant flow + 7Q10

NOTE: If the IWCa is >33%, specify the NOAEC = 100% test/endpoint for use

Dilution, acute	1.36363636	100/IWCa
Dilution, chronic	1.41818182	100/IWCc

WLA_a	0.40909091	Instream criterion (0.3 TUa) X's Dilution, acute
WLA_c	1.41818182	Instream criterion (1.0 TUc) X's Dilution, chronic
$WLA_{a,c}$	4.09090909	ACR X's WLA_a - converts acute WLA to chronic units

ACR -acute/chronic ratio	10	LC50/NOEC (Default is 10 - if data are available, use tables Page 3)
CV-Coefficient of variation	0.6	Default of 0.6 - if data are available, use tables Page 2)

Constants	eA	0.4109447	Default = 0.41
	eB	0.6010373	Default = 0.60
	eC	2.4334175	Default = 2.43
	eD	2.4334175	Default = 2.43 (1 samp)

**The Maximum Daily Limit is calculated from the lowest LTA, X's eC. The LTAa,c and MDL using it are driven by the ACR.

$LTA_{a,c}$	1.68113741	WLAa,c X's eA			
LTA_c	0.85238017	WLAc X's eB			
MDL** with $LTA_{a,c}$	4.09090919	TU_c	NOEC =	24.444444	(Protects from acute/chronic toxicity)
MDL** with LTA_c	2.07419682	TU_c	NOEC =	48.211432	(Protects from chronic toxicity)
AML with lowest LTA	2.07419682	TU_c	NOEC =	48.211432	Lowest LTA X's eD

Rounded NOEC's		
NOEC =	25	%
NOEC =	49	%
NOEC =	49	

IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a

MDL with $LTA_{a,c}$	0.40909092	TU_a	LC50 =	244.444438	%	Use NOAEC=100%
MDL with LTA_c	0.20741968	TU_a	LC50 =	482.114324	%	Use NOAEC=100%

Rounded LC50's		
LC50 =	NA	%
LC50 =	NA	

Page 2 - Follow the directions to develop a site specific CV (coefficient of variation)

IF YOU HAVE AT LEAST 10 DATA POINTS THAT ARE QUANTIFIABLE (NOT "<" OR ">") FOR A SPECIES, ENTER THE DATA IN EITHER COLUMN "G" (VERTEBRATE) OR COLUMN "J" (INVERTEBRATE). THE 'CV' WILL BE PICKED UP FOR THE CALCULATIONS BELOW. THE DEFAULT VALUES FOR eA, eB, AND eC WILL CHANGE IF THE 'CV' IS ANYTHING OTHER THAN 0.6.

Coefficient of Variation for effluent tests

CV = 0.6 (Default 0.6)

δ^2 = 0.3074847

δ = 0.55451303

Using the log variance to develop eA

(P. 100, step 2a of TSD)

Z = 1.881 (97% probability stat from table

A = -0.8892967

eA = 0.41094469

Using the log variance to develop eB

(P. 100, step 2b of TSD)

δ_4^2 = 0.0861777

δ_4 = 0.29356038

B = -0.5090982

eB = 0.60103733

Using the log variance to develop eC

(P. 100, step 4a of TSD)

δ^2 = 0.3074847

δ = 0.55451303

C = 0.88929666

eC = 2.43341753

Using the log variance to develop eD

(P. 100, step 4b of TSD)

n = 1 This number will most likely stay as "1", for 1 sample/month.

δ_n^2 = 0.3074847

δ_n = 0.55451303

D = 0.88929666

eD = 2.43341753

	Vertebrate IC_{25} Data or LC_{50} Data	LN of data	Invertebrate IC_{25} Data or LC_{50} Data	LN of data
	**********		**********	
1	0		0	
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
St Dev	NEED DATA	NEED DATA	St Dev	NEED DATA NEED DATA
Mean	0	0	Mean	0 0
Variance	0	0.000000	Variance	0 0.000000
CV	0		CV	0

Page 3 - Follow directions to develop a site specific ACR (Acute to Chronic Ratio)

To determine Acute/Chronic Ratio (ACR), insert usable data below. Usable data is defined as valid paired test results, acute and chronic, tested at the same temperature, same species. The chronic NOEC must be less than the acute LC_{50}, since the ACR divides the LC_{50} by the NOEC. LC_{50}'s >100% should not be used.

Table 1. ACR using Vertebrate data

Set #	LC_{50}	NOEC	Test ACR	Logarithm	Geomean	Antilog	ACR to Use
1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
5	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
8	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
9	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
				ACR for vertebrate data:			0

Table 1. Result:	Vertebrate ACR	0
Table 2. Result:	Invertebrate ACR	0
	Lowest ACR	Default to 10

Table 2. ACR using Invertebrate data

Set #	LC_{50}	NOEC	Test ACR	Logarithm	Geomean	Antilog	ACR to Use
1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
5	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
8	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
9	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
				ACR for vertebrate data:			0

DILUTION SERIES TO RECOMMEND

Table 4.	Monitoring		Limit	
	% Effluent	TUc	% Effluent	TUc
Dilution series based on data mean	100	1.0		
Dilution series to use for limit			49	2.0408163
Dilution factor to recommend:	0.5		0.7	
Dilution series to recommend:	100.0	1.00	100.0	1.00
	50.0	2.00	70.0	1.43
	25.0	4.00	49.0	2.04
	12.5	8.00	34.3	2.92
	6.25	16.00	24.0	4.16
Extra dilutions if needed	3.12	32.05	16.8	5.95
	1.56	64.10	11.8	8.50

Convert LC_{50}'s and NOEC's to Chronic TU's

for use in WLA.EXE

Table 3. ACR used: 10

	Enter LC_{50}	TUc	Enter NOEC	TUc
1		NO DATA		NO DATA
2		NO DATA		NO DATA
3		NO DATA		NO DATA
4		NO DATA		NO DATA
5		NO DATA		NO DATA
6		NO DATA		NO DATA
7		NO DATA		NO DATA
8		NO DATA		NO DATA
9		NO DATA		NO DATA
10		NO DATA		NO DATA
11		NO DATA		NO DATA
12		NO DATA		NO DATA
13		NO DATA		NO DATA
14		NO DATA		NO DATA
15		NO DATA		NO DATA
16		NO DATA		NO DATA
17		NO DATA		NO DATA
18		NO DATA		NO DATA
19		NO DATA		NO DATA
20		NO DATA		NO DATA

If WLA.EXE determines that an acute limit is needed, you need to convert the TUc answer you get to TUa and then an LC50, enter it here:

NO DATA	$\%LC_{50}$	
NO DATA	TUa	

Cell: I9
Comment:
This is assuming that the data are Type 2 data (none of the data in the data set are censored - "<" or ">").

Cell: K18
Comment: This is assuming that the data are Type 2 data (none of the data in the data set are censored - "<" or ">").

Cell: J22
Comment: Remember to change the "N" to "Y" if you have ratios entered, otherwise, they won't be used in the calculations.

Cell: C40
Comment:
If you have entered data to calculate an ACR on page 3, and this is still defaulted to "10", make sure you have selected "Y" in cell E21

Cell: C41
Comment: If you have entered data to calculate an effluent specific CV on page 2, and this is still defaulted to "0.6", make sure you have selected "Y" in cell E20

Cell: L48
Comment:
See Row 151 for the appropriate dilution series to use for these NOEC's

Cell: G62
Comment:
Vertebrates are:
Pimephales promelas
Oncorhynchus mykiss
Cyprinodon variegatus

Cell: J62
Comment:
Invertebrates are:
Ceriodaphnia dubia
Mysidopsis bahia

Cell: C117
Comment: Vertebrates are:

Pimephales promelas
Cyprinodon variegatus

Cell: M119
Comment: The ACR has been picked up from cell C34 on Page 1. If you have paired data to calculate an ACR, enter it in the tables to the left, and make sure you have a "Y" in cell E21 on Page 1. Otherwise, the default of 10 will be used to convert your acute data.

Cell: M121
Comment: If you are only concerned with acute data, you can enter it in the NOEC column for conversion and the number calculated will be equivalent to the TUa. The calculation is the same: 100/NOEC = TUc or 100/LC50 = TUa.

Cell: C138
Comment: Invertebrates are:

Ceriodaphnia dubia
Mysidopsis bahia

Spreadsheet for determination of WET test endpoints or WET limits

Excel 97
Revision Date: 12/05/01
File: WETLIM10.xls
(MIX.EXE required also)

Enter data in the cells with blue type:

Entry Date:	10/28/08
Facility Name:	WWWA WPCP
VPDES Number:	VA0025020
Outfall Number:	1

Plant Flow:	62	MGD
Acute 1Q10:	20	MGD
Chronic 7Q10:	23	MGD

% Flow to be used from MIX.EXE		
	100	%
	100	%

Are data available to calculate CV? (Y/N) N (Minimum of 10 data points, same species, needed)
Are data available to calculate ACR? (Y/N) N (NOEC<LC50, do not use greater/less than data)

Go to Page 2
Go to Page 3

Acute Endpoint/Permit Limit — Use as LC_{50} in Special Condition, as TUa on DMR

ACUTE	100% =	NOAEC	LC_{50} =	NA	% Use as	NA	TUa

ACUTE WLAa 0.39677419 — Note: Inform the permittee that if the mean of the data exceeds this TUa: 1.0 a limit may result using WLA.EXE

Chronic Endpoint/Permit Limit — Use as NOEC in Special Condition, as TUc on DMR

CHRONIC	2.005142712	TU_c	NOEC =	50	% Use as	2.00	TU_c
BOTH*	3.967742033	TU_c	NOEC =	26	% Use as	3.84	TU_c
AML	2.005142712	TU_c	NOEC =	50	% Use as	2.00	TU_c

ACUTE WLAa,c 3.96774194
CHRONIC WLAc 1.37096774
* Both means acute expressed as chronic

Note: Inform the permittee that if the mean of the data exceeds this TUc: 1.0 a limit may result using WLA.EXE

Difuser /modeling study?
Enter Y/N n
Acute 1 :1
Chronic 1 :1

IWC_a	75.6097561	%	Plant flow/plant-flow + 1Q10
IWC_c	72.9411765	%	Plant flow/plant flow + 7Q10

NOTE: If the IWCa is >33%, specify the NOAEC = 100% test/endpoint for use

Dilution, acute	1.32258065		100/IWCa
Dilution, chronic	1.37096774		100/IWCc

WLA_a	0.39677419	Instream criterion (0.3 TUa) X's Dilution, acute
WLA_c	1.37096774	Instream criterion (1.0 TUc) X's Dilution, chronic
$WLA_{a,c}$	3.96774194	ACR X's WLA_a - converts acute WLA to chronic units

ACR -acute/chronic ratio	10	LC50/NOEC (Default is 10 - if data are available, use tables Page 3)
CV-Coefficient of variation	0.6	Default of 0.6 - if data are available, use tables Page 2)

Constants	eA	0.4109447	Default = 0.41
	eB	0.6010373	Default = 0.60
	eC	2.4334175	Default = 2.43
	eD	2.4334175	Default = 2.43 (1 samp)

**The Maximum Daily Limit is calculated from the lowest LTA, X's eC. The LTAa,c and MDL using it are driven by the ACR.

$LTA_{a,c}$	1.63052252	WLAa,c X's eA				
LTA_c	0.82400275	WLAc X's eB				
MDL** with $LTA_{a,c}$	3.96774203	TU_c	NOEC =	25.203251	(Protects from acute/chronic toxicity)	
MDL** with LTA_c	2.00514271	TU_c	NOEC =	49.871762	(Protects from chronic toxicity)	
AML with lowest LTA	2.00514271	TU_c	NOEC =	49.871762	Lowest LTA X's eD	

IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a

MDL with $LTA_{a,c}$	0.3967742	TU_a	LC50 =	252.032514	%	Use NOAEC=100%	
MDL with LTA_c	0.20051427	TU_a	LC50 =	498.717619	%	Use NOAEC=100%	

Rounded NOEC's			%
NOEC =	26	%	
NOEC =	50	%	
NOEC =	50		
Rounded LC50's			%
LC50 =	NA	%	
LC50 =	NA		

Page 2 - Follow the directions to develop a site specific CV (coefficient of variation)

IF YOU HAVE AT LEAST 10 DATA POINTS THAT ARE QUANTIFIABLE (NOT "<" OR ">") FOR A SPECIES, ENTER THE DATA IN EITHER COLUMN "G" (VERTEBRATE) OR COLUMN "J" (INVERTEBRATE). THE 'CV' WILL BE PICKED UP FOR THE CALCULATIONS BELOW. THE DEFAULT VALUES FOR eA, eB, AND eC WILL CHANGE IF THE 'CV' IS ANYTHING OTHER THAN 0.6.

Coefficient of Variation for effluent tests

CV = 0.6 (Default 0.6)

δ^2 = 0.3074847

$\bar{o}$ = 0.55451303

Using the log variance to develop eA

(P. 100, step 2a of TSD)

Z = 1.881 (97% probability stat from table

A = -0.8692967

eA = 0.41094469

Using the log variance to develop eB

(P. 100, step 2b of TSD)

δ_4^2 = 0.0861777

$\bar{o}_4$ = 0.29356038

B = -0.5090982

eB = 0.60103733

Using the log variance to develop eC

(P. 100, step 4a of TSD)

δ^2 = 0.3074847

$\bar{o}$ = 0.55451303

C = 0.88929666

eC = 2.43341753

Using the log variance to develop eD

(P. 100, step 4b of TSD)

n = 1 This number will most likely stay as "1", for 1 sample/month.

δ_n^2 = 0.3074847

$\bar{o}_n$ = 0.55451303

D = 0.88929666

eD = 2.43341753

	Vertebrate IC_{25} Data or LC_{50} Data	LN of data	Invertebrate IC_{25} Data or LC_{50} Data	LN of data
	**********		**********	
1	0		0	
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
St Dev	NEED DATA	NEED DATA	St Dev	NEED DATA NEED DATA
Mean	0	0	Mean	0 0
Variance	0	0.000000	Variance	0 0.000000
CV	0		CV	0

Page 3 - Follow directions to develop a site specific ACR (Acute to Chronic Ratio)

To determine Acute/Chronic Ratio (ACR), insert usable data below. Usable data is defined as valid paired test results, acute and chronic, tested at the same temperature, same species. The chronic NOEC must be less than the acute LC_{50}, since the ACR divides the LC_{50} by the NOEC. LC_{50}'s >100% should not be used.

Table 1. ACR using Vertebrate data

Set #	LC_{50}	NOEC	Test ACR	Logarithm	Geomean	Antilog	ACR to Use
1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
5	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
8	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
9	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
				ACR for vertebrate data:			0

Table 1. Result:	Vertebrate ACR	0
Table 2. Result:	Invertebrate ACR	0
	Lowest ACR	Default to 10

Table 2. ACR using Invertebrate data

Set #	LC_{50}	NOEC	Test ACR	Logarithm	Geomean	Antilog	ACR to Use
1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
5	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
8	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
9	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
				ACR for vertebrate data:			0

DILUTION SERIES TO RECOMMEND

Table 4.	Monitoring		Limit	
	% Effluent	TUc	% Effluent	TUc
Dilution series based on data mean	100	1.0		
Dilution series to use for limit			50	2
Dilution factor to recommend:	0.5		0.7071068	
Dilution series to recommend:	100.0	1.00	100.0	1.00
	50.0	2.00	70.7	1.41
	25.0	4.00	50.0	2.00
	12.5	8.00	35.4	2.83
	6.25	16.00	25.0	4.00
Extra dilutions if needed	3.12	32.05	17.7	5.66
	1.56	64.10	12.5	8.00

Convert LC_{50}'s and NOEC's to Chronic TU's

Table 3. for use in WLA.EXE — ACR used: 10

	Enter LC_{50}	TUc	Enter NOEC	TUc
1		NO DATA		NO DATA
2		NO DATA		NO DATA
3		NO DATA		NO DATA
4		NO DATA		NO DATA
5		NO DATA		NO DATA
6		NO DATA		NO DATA
7		NO DATA		NO DATA
8		NO DATA		NO DATA
9		NO DATA		NO DATA
10		NO DATA		NO DATA
11		NO DATA		NO DATA
12		NO DATA		NO DATA
13		NO DATA		NO DATA
14		NO DATA		NO DATA
15		NO DATA		NO DATA
16		NO DATA		NO DATA
17		NO DATA		NO DATA
18		NO DATA		NO DATA
19		NO DATA		NO DATA
20		NO DATA		NO DATA

If WLA.EXE determines that an acute limit is needed, you need to convert the TUc answer you get to TUa and then an LC_{50}, enter it here:

NO DATA	$\%LC_{50}$	
NO DATA	TUa	

Cell: I9
Comment:
This is assuming that the data are Type 2 data (none of the data in the data set are censored - "<" or ">").

Cell: K18
Comment: This is assuming that the data are Type 2 data (none of the data in the data set are censored - "<" or ">").

Cell: J22
Comment: Remember to change the "N" to "Y" if you have ratios entered, otherwise, they won't be used in the calculations.

Cell: C40
Comment:
If you have entered data to calculate an ACR on page 3, and this is still defaulted to "10", make sure you have selected "Y" in cell E21

Cell: C41
Comment: If you have entered data to calculate an effluent specific CV on page 2, and this is still defaulted to "0.6", make sure you have selected "Y" in cell E20

Cell: L48
Comment:
See Row 151 for the appropriate dilution series to use for these NOEC's

Cell: G62
Comment:
Vertebrates are:
Pimephales promelas
Oncorhynchus mykiss
Cyprinodon variegatus

Cell: J62
Comment:
Invertebrates are:
Ceriodaphnia dubia
Mysidopsis bahia

Cell: C117
Comment: Vertebrates are:

Pimephales promelas
Cyprinodon variegatus

Cell: M119
Comment: The ACR has been picked up from cell C34 on Page 1. If you have paired data to calculate an ACR, enter it in the tables to the left, and make sure you have a "Y" in cell E21 on Page 1. Otherwise, the default of 10 will be used to convert your acute data.

Cell: M121
Comment: If you are only concerned with acute data, you can enter it in the NOEC column for conversion and the number calculated will be equivalent to the TUa. The calculation is the same: 100/NOEC = TUc or 100/LC50 = TUa.

Cell: C138
Comment: Invertebrates are:

Ceriodaphnia dubia
Mysidopsis bahia

Attachment P

Storm Water Data

- **Storm Water Data (Outfalls 007, 008, 009)**
- **Storm Water Lab Summary Data Sheets**

Western Virginia Water Authority WPCP
VA0025020

Storm Water Data Form 2F, Part VII

Outfall 007

Sample Date	BOD_5 (mg/L)	COD (mg/L)	TSS (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Oil and Grease (mg/L)	pH (S.U.)	TKN (mg/L)	CN, TR (ug/L)	Cr, VI (ug/L)	Ni, TR (ug/L)	Hg,TR (ug/L)	Se, TR (ug/L)
Decision Criteria	**30**	**120**	**100**	**2.2**	**2**		**6-9**	**1.5**	**200**	**7.1**	**28**	**19**	**4.6**
9/10/08 grab	29	30	16	1.02	0.40	<5.0	7.51	1.4	<20	<10	6.2	<10.0	<20.0
9/10/08 composite	4	28	18	0.76	0.32	--	--	<1.0	--	<10.0	<5.0	<1.0	<20.0

Outfall 008

Sample Date	BOD_5 (mg/L)	COD (mg/L)	TSS (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Oil and Grease (mg/L)	pH (S.U.)	TKN (mg/L)	CN, TR (ug/L)	Cr, VI (ug/L)	Ni, TR (ug/L)	Hg,TR (ug/L)	Se, TR (ug/L)
Decision Criteria	**30**	**120**	**100**	**2.2**	**2**		**6-9**	**1.5**	**200**	**7.1**	**28**	**19**	**4.6**
7/19/04 grab						<5	7.36						
7/19/04 composite	7	64	58	**2.78**	0.417								
8/26/08 grab	**32**	**202**	78	0.63	0.84	<5.0	7.48	**3.8**	<20	<10	6.2	<1.0	<20.0
8/26/08 composite	4	33	52	0.3	0.37	--	--	1.0	--	<10.0	<5.0	<1.0	<20.0

Outfall 009

Sample Date	BOD_5 (mg/L)	COD (mg/L)	TSS (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Oil and Grease (mg/L)	pH (S.U.)	TKN (mg/L)	CN, TR (ug/L)	Cr, VI (ug/L)	Ni, TR (ug/L)	Hg,TR (ug/L)	Se, TR (ug/L)
Decision Criteria	**30**	**120**	**100**	**2.2**	**2**		**6-9**	**1.5**	**200**	**7.1**	**28**	**19**	**4.6**
1/5/07 grab		<20	2.2	1.3	0.037	<5	7.51						
7/7/04 composite	<3	64	15	1.48	0.131								
5/28/08 grab	<2	73	13	1.39	0.44	<5.0	7.68	**2.7**	<20	<10	<5.0	<1.0	<20.0
5/28/08 composite	<2	56	12	0.57	0.34	--	--	**2.0**	--	<10	<5.0	<1.0	<20.0

REI Consultants, Inc. Analytical Results

Date: *17-Sep-08*

CLIENT:	WESTERN VA WATER WWTP	**WorkOrder:**	0809739
Client Sample ID:	SW 007 GRAB	**Lab ID:**	0809739-01A
Project:	STORM WATER 007	**Collection Date:**	9/10/2008 11:19:00 AM
Site ID:		**Matrix:**	SURFACE WATER

Analyses	Result	Units	Qual	PQL	MCL	Prep Date	Date Analyzed
METALS BY ICP			E200.7			Analyst: BM	
Nickel	ND	mg/L		0.0050	NA	09/11/08 8:25 AM	09/11/08 6:56 PM
Selenium	ND	mg/L		0.0200	NA	09/11/08 8:25 AM	09/11/08 6:56 PM
MERCURY, TOTAL			E245.1			Analyst: CGW	
Mercury	ND	mg/L		0.0010	NA	09/12/08 10:27 AM	09/16/08 10:23 AM
HEXAVALENT CHROMIUM, DISSOLVED			SM3500-CR D			Analyst: CGW	
Chromium, Hexavalent	ND	mg/L		0.010	NA		09/11/08 8:36 AM
BOD, 5 DAY, 20°C			SM5210 B			Analyst: JaR	
Biochemical Oxygen Demand	29	mg/L		2	NA	09/11/08 6:50 AM	09/16/08 7:48 AM
CHEMICAL OXYGEN DEMAND			E410.4			Analyst: DSA	
Chemical Oxygen Demand	30	mg/L		10	NA		09/12/08 4:10 PM
CYANIDE			E335.4			Analyst: BA	
Cyanide, Total	ND	mg/L		0.020	NA		09/12/08 2:00 PM
ANIONS BY ION CHROMATOGRAPHY			SM4110B			Analyst: JJ	
Nitrogen, Nitrate-Nitrite	1.02	mg/L		0.10	NA		09/12/08 2:33 AM
PHOSPHORUS			SM4500-P BE			Analyst: GV	
Phosphorus, Total	0.40	mg/L		0.05	NA		09/17/08 1:00 PM
TOTAL KJELDAHL NITROGEN (TKN)			SM4500-NORGC			Analyst: JL	
Nitrogen, Kjeldahl, Total	1.4	mg/L		1.0	NA		09/15/08 7:00 AM
OIL AND GREASE			E1664			Analyst: JL	
Oil & Grease	ND	mg/L		5.0	NA		09/15/08 8:30 AM
TOTAL SUSPENDED SOLIDS			SM2540 D			Analyst: GV	
Total Suspended Solids	16	mg/L		1	NA		09/11/08 8:50 AM

Key: MCL Maximum Contaminant Level
MDL Minimum Detection Limit
NA Not Applicable
ND Not Detected at the PQL or MDL
PQL Practical Quantitation Limit
TIC Tentatively Identified Compound, Estimated Concentrati

Qualifiers: B Analyte detected in the associated Method Blank
E Estimated Value above quantitation range
H Holding times for preparation or analysis exceeded
S Spike/Surrogate Recovery outside accepted recovery limit
* Value exceeds Maximum Contaminant Level

REI Consultants, Inc. Analytical Results

Date: *17-Sep-08*

CLIENT:	WESTERN VA WATER WWTP	**WorkOrder:**	0809739
Client Sample ID:	SW 007 COMP	**Lab ID:**	0809739-02A
Project:	STORM WATER 007	**Collection Date:**	9/10/2008 3:10:00 PM
Site ID:		**Matrix:**	SURFACE WATER

Analyses	Result	Units	Qual	PQL	MCL	Prep Date	Date Analyzed
METALS BY ICP			**E200.7**			Analyst: **BM**	
Nickel	ND	mg/L		0.0050	NA	09/12/08 9:53 AM	09/15/08 4:47 PM
Selenium	ND	mg/L		0.0200	NA	09/12/08 9:53 AM	09/15/08 4:47 PM
MERCURY, TOTAL			**E245.1**			Analyst: **CGW**	
Mercury	ND	mg/L		0.0010	NA	09/12/08 10:27 AM	09/16/08 10:24 AM
HEXAVALENT CHROMIUM, DISSOLVED			**SM3500-CR D**			Analyst: **JD**	
Chromium, Hexavalent	ND	mg/L		0.010	NA	09/12/08 9:53 AM	09/11/08 4:34 PM
BOD, 5 DAY, 20°C			**SM5210 B**			Analyst: **JaR**	
Biochemical Oxygen Demand	4	mg/L		2	NA	09/12/08 12:46 PM	09/17/08 9:36 AM
CHEMICAL OXYGEN DEMAND			**E410.4**			Analyst: **DSA**	
Chemical Oxygen Demand	28	mg/L		10	NA		09/12/08 4:10 PM
ANIONS BY ION CHROMATOGRAPHY			**SM4110B**			Analyst: **JJ**	
Nitrogen, Nitrate-Nitrite	0.76	mg/L		0.10	NA		09/13/08 3:18 AM
PHOSPHORUS			**SM4500-P BE**			Analyst: **GV**	
Phosphorus, Total	0.32	mg/L		0.05	NA		09/17/08 1:00 PM
TOTAL KJELDAHL NITROGEN (TKN)			**SM4500-NORGC**			Analyst: **JL**	
Nitrogen, Kjeldahl, Total	ND	mg/L		1.0	NA		09/15/08 7:00 AM
TOTAL SUSPENDED SOLIDS			**SM2540 D**			Analyst: **GV**	
Total Suspended Solids	16	mg/L		1	NA		09/12/08 8:20 AM

Key:
- MCL Maximum Contaminant Level
- MDL Minimum Detection Limit
- NA Not Applicable
- ND Not Detected at the PQL or MDL
- PQL Practical Quantitation Limit
- TIC Tentatively Identified Compound, Estimated Concentrati

Qualifiers:
- B Analyte detected in the associated Method Blank
- E Estimated Value above quantitation range
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate Recovery outside accepted recovery limit
- * Value exceeds Maximum Contaminant Level

REI Consultants, Inc. Analytical Results

Date: *10-Sep-08*

CLIENT:	WESTERN VA WATER WWTP	**WorkOrder:**	0808I63
Client Sample ID:	SW008 GRAB	**Lab ID:**	0808I63-02A
Project:	STORM WATER	**Collection Date:**	8/26/2008 6:30:00 PM
Site ID:		**Matrix:**	SURFACE WATER

Analyses	Result	Units	Qual	PQL	MCL	Prep Date	Date Analyzed
METALS BY ICP			**E200.7**			Analyst: **BM**	
Nickel	0.0062	mg/L		0.0050	NA	08/28/08 10:14 AM	08/28/08 2:23 PM
Selenium	ND	mg/L		0.0200	NA	08/28/08 10:14 AM	08/28/08 2:23 PM
MERCURY, TOTAL			**E245.1**			Analyst: **CGW**	
Mercury	ND	mg/L		0.0010	NA	08/28/08 10:55 AM	09/03/08 11:04 AM
HEXAVALENT CHROMIUM, DISSOLVED			**SM3500-CR D**			Analyst: **JD**	
Chromium, Hexavalent	ND	mg/L		0.010	NA	08/28/08 10:14 AM	08/27/08 4:53 PM
NOTES: Analyzed by 200.9 for total Chromium within 200.9 hold time. Results verify hexavalent chromium not present at or above the detection limit.							
BOD, 5 DAY, 20°C			**SM5210 B**			Analyst: **JaR**	
Biochemical Oxygen Demand	32	mg/L		2	NA	08/28/08 6:32 AM	09/02/08 8:38 AM
CHEMICAL OXYGEN DEMAND			**E410.4**			Analyst: **DSA**	
Chemical Oxygen Demand	202	mg/L		10	NA		08/29/08 3:30 PM
CYANIDE			**E335.4**			Analyst: **BA**	
Cyanide, Total	ND	mg/L		0.020	NA		09/04/08 12:30 PM
ANIONS BY ION CHROMATOGRAPHY			**SM4110B**			Analyst: **SB**	
Nitrogen, Nitrate-Nitrite	0.63	mg/L		0.10	NA		09/02/08 7:39 PM
PHOSPHORUS			**SM4500-P BE**			Analyst: **SB**	
Phosphorus, Total	0.84	mg/L		0.50	NA		09/04/08 10:45 AM
TOTAL KJELDAHL NITROGEN (TKN)			**SM4500-NORGC**			Analyst: **JL**	
Nitrogen, Kjeldahl, Total	3.8	mg/L		1.0	NA		08/28/08 7:00 AM
OIL AND GREASE			**E1664**			Analyst: **JL**	
Oil & Grease	ND	mg/L		5.0	NA		08/28/08 8:00 AM
TOTAL SUSPENDED SOLIDS			**SM2540 D**			Analyst: **GV**	
Total Suspended Solids	78	mg/L		1	NA		08/28/08 7:45 AM

Key:	MCL	Maximum Contaminant Level	**Qualifiers:**	B	Analyte detected in the associated Method Blank
	MDL	Minimum Detection Limit		E	Estimated Value above quantitation range
	NA	Not Applicable		H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the PQL or MDL		S	Spike/Surrogate Recovery outside accepted recovery limit
	PQL	Practical Quantitation Limit		*	Value exceeds Maximum Contaminant Level
	TIC	Tentatively Identified Compound, Estimated Concentrati			

REI Consultants, Inc. Analytical Results

Date: *10-Sep-08*

CLIENT:	WESTERN VA WATER WWTP	**WorkOrder:**	0808I63
Client Sample ID:	SW008 COMP	**Lab ID:**	0808I63-01A
Project:	STORM WATER	**Collection Date:**	8/27/2008 7:20:00 AM
Site ID:		**Matrix:**	SURFACE WATER

Analyses	Result	Units	Qual	PQL	MCL	Prep Date	Date Analyzed
METALS BY ICP			**E200.7**			Analyst: **BM**	
Nickel	ND	mg/L		0.0050	NA	08/28/08 10:14 AM	08/28/08 2:12 PM
Selenium	ND	mg/L		0.0200	NA	08/28/08 10:14 AM	08/28/08 2:12 PM
MERCURY, TOTAL			**E245.1**			Analyst: **CGW**	
Mercury	ND	mg/L		0.0010	NA	08/28/08 10:55 AM	09/03/08 11:02 AM
HEXAVALENT CHROMIUM, DISSOLVED			**SM3500-CR D**			Analyst: **JD**	
Chromium, Hexavalent	ND	mg/L		0.010	NA	08/28/08 10:14 AM	08/27/08 4:43 PM
NOTES: Analyzed by 200.9 for total Chromium within 200.9 hold time. Results verify hexavalent chromium not present at or above the detection limit.							
BOD, 5 DAY, 20°C			**SM5210 B**			Analyst: **JaR**	
Biochemical Oxygen Demand	4	mg/L		2	NA	08/28/08 6:30 AM	09/02/08 8:36 AM
CHEMICAL OXYGEN DEMAND			**E410.4**			Analyst: **DSA**	
Chemical Oxygen Demand	33	mg/L		10	NA		08/28/08 12:30 PM
ANIONS BY ION CHROMATOGRAPHY			**SM4110B**			Analyst: **SB**	
Nitrogen, Nitrate-Nitrite	0.30	mg/L		0.10	NA		09/02/08 7:39 PM
PHOSPHORUS			**SM4500-P BE**			Analyst: **SB**	
Phosphorus, Total	0.37	mg/L		0.25	NA		09/03/08 9:45 AM
TOTAL KJELDAHL NITROGEN (TKN)			**SM4500-NORGC**			Analyst: **JL**	
Nitrogen, Kjeldahl, Total	1.0	mg/L		1.0	NA		08/28/08 7:00 AM
TOTAL SUSPENDED SOLIDS			**SM2540 D**			Analyst: **GV**	
Total Suspended Solids	52	mg/L		1	250		08/28/08 7:45 AM

Key:			Qualifiers:		
	MCL	Maximum Contaminant Level		B	Analyte detected in the associated Method Blank
	MDL	Minimum Detection Limit		E	Estimated Value above quantitation range
	NA	Not Applicable		H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the PQL or MDL		S	Spike/Surrogate Recovery outside accepted recovery limit
	PQL	Practical Quantitation Limit		*	Value exceeds Maximum Contaminant Level
	TIC	Tentatively Identified Compound, Estimated Concentrati			

REI Consultants, Inc. Analytical Results

Date: *05-Jun-08*

CLIENT:	WESTERN VA WATER WWTP	**WorkOrder:**	0805H84
Client Sample ID:	SW 009 GRAB	**Lab ID:**	0805H84-01A
Project:	STORMWATER 009	**Collection Date:**	5/28/2008 1:57:00 PM
Site ID:		**Matrix:**	STORMWATER

Analyses	Result	Units	Qual	MDL	PQL	Date Analyzed
METALS BY ICP-MS			**E200.8**			Analyst: **DBB**
Nickel	ND	mg/L		NA	0.0100	6/2/2008 10:51:21 AM
Selenium	ND	mg/L		NA	0.0050	6/2/2008 10:51:21 AM
MERCURY, TOTAL			**E245.1**			Analyst: **DL**
Mercury	ND	mg/L		NA	0.0010	5/30/2008 1:38:00 PM
HEXAVALENT CHROMIUM, DISSOLVED			**SM3500-CR D**			Analyst: **CHW**
Chromium, Hexavalent	ND	mg/L		NA	0.010	5/29/2008 11:41:00 AM
M-COLI BLUE24			**E10029**			Analyst: **KK**
E-Coli	> 32000	col/100mL		NA	1	5/29/2008 4:40:00 PM
BOD, 5 DAY, 20°C			**SM5210 B**			Analyst: **BS**
Biochemical Oxygen Demand	ND	mg/L		NA	2	6/3/2008 1:02:00 PM
CHEMICAL OXYGEN DEMAND			**E410.4**			Analyst: **DSA**
Chemical Oxygen Demand	73	mg/L		NA	10	5/30/2008 12:40:00 PM
CYANIDE			**E335.4**			Analyst: **BA**
Cyanide, Total	ND	mg/L		NA	0.020	6/2/2008 12:10:00 PM
ANIONS BY ION CHROMATOGRAPHY			**SM4110B**			Analyst: **SB**
Nitrogen, Nitrate-Nitrite	1.39	mg/L		NA	0.10	6/2/2008 8:22:00 PM
PHOSPHORUS			**SM4500-P BE**			Analyst: **SB**
Phosphorus, Total	0.44	mg/L		NA	0.05	6/3/2008 9:15:00 AM
TOTAL KJELDAHL NITROGEN (TKN)			**SM4500-NORGC**			Analyst: **JL**
Nitrogen, Kjeldahl, Total	2.7	mg/L		NA	1.0	6/3/2008 7:30:00 AM
OIL AND GREASE			**E1664**			Analyst: **JL**
Oil & Grease	ND	mg/L		NA	5.0	6/4/2008 9:30:00 AM
TOTAL SUSPENDED SOLIDS			**SM2540 D**			Analyst: **GV**
Total Suspended Solids	13	mg/L		NA	1	5/30/2008 8:00:00 AM

Key:				
	MCL	Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	MDL	Minimum Detection Limit	E	Estimated Value above quantitation range
	NA	Not Applicable	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the PQL or MDL	S	Spike/Surrogate Recovery outside accepted recovery limits
	PQL	Practical Quantitation Limit	*	Value exceeds Maximum Contaminant Level
	TIC	Tentatively Identified Compound, Estimated Concentration		

REI Consultants, Inc. Analytical Results

Date: *05-Jun-08*

CLIENT:	WESTERN VA WATER WWTP	**WorkOrder:**	0805H84
Client Sample ID:	SW 009 GRAB	**Lab ID:**	0805H84-01A
Project:	STORMWATER 009	**Collection Date:**	5/28/2008 1:57:00 PM
Site ID:		**Matrix:**	STORMWATER

Analyses	Result	Units	Qual	MDL	PQL	Date Analyzed
METALS BY ICP-MS			**E200.8**			Analyst: **DBB**
Nickel	ND	mg/L		NA	0.0100	6/2/2008 10:51:21 AM
Selenium	ND	mg/L		NA	0.0050	6/2/2008 10:51:21 AM
MERCURY, TOTAL			**E245.1**			Analyst: **DL**
Mercury	ND	mg/L		NA	0.0010	5/30/2008 1:38:00 PM
HEXAVALENT CHROMIUM, DISSOLVED			**SM3500-CR D**			Analyst: **CHW**
Chromium, Hexavalent	ND	mg/L		NA	0.010	5/29/2008 11:41:00 AM
M-COLI BLUE24			**E10029**			Analyst: **KK**
E-Coli	> 32000	col/100mL		NA	1	5/29/2008 4:40:00 PM
BOD, 5 DAY, 20°C			**SM5210 B**			Analyst: **BS**
Biochemical Oxygen Demand	ND	mg/L		NA	2	6/3/2008 1:02:00 PM
CHEMICAL OXYGEN DEMAND			**E410.4**			Analyst: **DSA**
Chemical Oxygen Demand	73	mg/L		NA	10	5/30/2008 12:40:00 PM
CYANIDE			**E335.4**			Analyst: **BA**
Cyanide, Total	ND	mg/L		NA	0.020	6/2/2008 12:10:00 PM
ANIONS BY ION CHROMATOGRAPHY			**SM4110B**			Analyst: **SB**
Nitrogen, Nitrate-Nitrite	1.39	mg/L		NA	0.10	6/2/2008 8:22:00 PM
PHOSPHORUS			**SM4500-P BE**			Analyst: **SB**
Phosphorus, Total	0.44	mg/L		NA	0.05	6/3/2008 9:15:00 AM
TOTAL KJELDAHL NITROGEN (TKN)			**SM4500-NORGC**			Analyst: **JL**
Nitrogen, Kjeldahl, Total	2.7	mg/L		NA	1.0	6/3/2008 7:30:00 AM
OIL AND GREASE			**E1664**			Analyst: **JL**
Oil & Grease	ND	mg/L		NA	5.0	6/4/2008 9:30:00 AM
TOTAL SUSPENDED SOLIDS			**SM2540 D**			Analyst: **GV**
Total Suspended Solids	13	mg/L		NA	1	5/30/2008 8:00:00 AM

Key:

MCL	Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
MDL	Minimum Detection Limit	E	Estimated Value above quantitation range
NA	Not Applicable	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the PQL or MDL	S	Spike/Surrogate Recovery outside accepted recovery limits
PQL	Practical Quantitation Limit	*	Value exceeds Maximum Contaminant Level
TIC	Tentatively Identified Compound, Estimated Concentration		

REI Consultants, Inc. — Analytical Results — Date: *05-Jun-08*

CLIENT:	WESTERN VA WATER WWTP	**WorkOrder:**	0805H84
Client Sample ID:	SW 009 COMP	**Lab ID:**	0805H84-02A
Project:	STORMWATER 009	**Collection Date:**	5/28/2008 5:00:00 PM
Site ID:		**Matrix:**	STORMWATER

Analyses	Result	Units	Qual	MDL	PQL	Date Analyzed
METALS BY ICP-MS			**E200.8**			Analyst: **DBB**
Nickel	ND	mg/L		NA	0.0100	6/2/2008 10:57:11 AM
Selenium	ND	mg/L		NA	0.0050	6/2/2008 10:57:11 AM
MERCURY, TOTAL			**E245.1**			Analyst: **DL**
Mercury	ND	mg/L		NA	0.0010	5/30/2008 1:40:00 PM
HEXAVALENT CHROMIUM, DISSOLVED			**SM3500-CR D**			Analyst: **CHW**
Chromium, Hexavalent	ND	mg/L	H	NA	0.010	5/29/2008 4:52:00 PM
BOD, 5 DAY, 20°C			**SM5210 B**			Analyst: **BS**
Biochemical Oxygen Demand	ND	mg/L		NA	2	6/3/2008 1:04:00 PM
CHEMICAL OXYGEN DEMAND			**E410.4**			Analyst: **DSA**
Chemical Oxygen Demand	56	mg/L		NA	10	5/30/2008 12:40:00 PM
ANIONS BY ION CHROMATOGRAPHY			**SM4110B**			Analyst: **SB**
Nitrogen, Nitrate-Nitrite	0.57	mg/L		NA	0.10	6/2/2008 10:10:00 PM
PHOSPHORUS			**SM4500-P BE**			Analyst: **SB**
Phosphorus, Total	0.34	mg/L		NA	0.05	6/3/2008 9:15:00 AM
TOTAL KJELDAHL NITROGEN (TKN)			**SM4500-NORGC**			Analyst: **JL**
Nitrogen, Kjeldahl, Total	2.0	mg/L		NA	1.0	6/3/2008 7:30:00 AM
TOTAL SUSPENDED SOLIDS			**SM2540 D**			Analyst: **GV**
Total Suspended Solids	12	mg/L		NA	1	5/30/2008 8:00:00 AM

Key:			
	MCL	Maximum Contaminant Level	B — Analyte detected in the associated Method Blank
	MDL	Minimum Detection Limit	E — Estimated Value above quantitation range
	NA	Not Applicable	H — Holding times for preparation or analysis exceeded
	ND	Not Detected at the PQL or MDL	S — Spike/Surrogate Recovery outside accepted recovery limits
	PQL	Practical Quantitation Limit	* — Value exceeds Maximum Contaminant Level
	TIC	Tentatively Identified Compound, Estimated Concentration	

Attachment Q

Sewage Sludge

- **Sludge Data**
- **Sludge Received from Offsite**

Western ... ia Water Authority
Water Pollution Control Plant
Attachment A.8 Sludge Data

	Pollutant Concentrations (mg/kg)										
Sample Date	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selinium	Zinc	Nitrogen
Dec-04	5.47	3.60	NA	582	117	1.73	27	48	4.45	854	40,300
Jan-05	6.57	3.50	NA	577	122	2.18	21	40	4.85	841	44,000
Feb-05	5.82	3.50	108	657	121	2.10	29	44	4.94	907	45,700
Mar-05	5.82	3.50	108	657	121	2.10	29	44	4.94	907	45,700
Apr-05	6.13	3.70	NA	600	131	1.78	26	45	4.95	765	28,600
May-05	4.85	2.80	145	526	119	1.82	24	50	4.24	753	40,100
Jun-05	3.86	3.50	NA	536	101	1.60	24	42	3.65	761	49,400
Jul-05	3.37	3.00	NA	560	116	1.53	22	44	3.47	764	50,700
Aug-05	5.71	3.30	NA	601	105	2.27	22	37	4.77	762	47,300
Sep-05	6.38	3.20	118	604	109	1.72	26	46	5.20	855	40,400
Oct-05	6.38	3.20	118	604	109	1.72	26	46	5.20	855	40,400
Nov-05	6.69	25.20	135	676	156	2.19	36	39	3.91	931	23,100
Jan-06	6.57	3.50	NA	577	122	2.18	21	40	4.85	841	44,000
Feb-06	5.86	2.00	NA	555	90	1.86	19	36	4.16	797	35,500
Mar-06	6.70	2.00	NA	577	85	1.40	16	31	5.10	770	42,500
Apr-06	7.70	4.00	NA	665	138	2.70	20	41	4.40	908	34,700
May-06	5.50	5.00	NA	444	62	1.30	13	28	3.80	637	30,200
Jun-06	5.00	1.00	NA	506	73	1.20	18	32	3.30	770	44,400
Jul-06	7.10	3.00	NA	647	111	1.30	24	46	1.30	945	41,600
Aug-06	5.20	2.00	118	552	108	1.00	19	40	3.30	809	38,600
Sep-06	7.50	6.00	158	685	163	2.40	21	49	4.50	960	32,700
Oct-06	7.10	4.00	NA	625	115	1.60	23	38	5.30	859	68,000
Nov-06	6.30	4.00	NA	556	105	1.40	20	37	4.90	793	39,900
Dec-06	7.20	3.00	NA	629	102	1.60	23	40	5.60	868	42,000
Jan-07	6.70	3.00	NA	559	93	1.40	20	37	4.90	793	48,800
Feb-07	6.80	1.00	NA	180	30	0.50	<5	23	2.00	305	13,600
Mar-07	6.90	3.00	NA	569	116	2.10	23	38	5.50	833	38,300
Apr-07	6.10	3.00	NA	640	107	1.60	17	52	5.00	814	37,800
May-07	6.00	4.00	NA	630	113	2.80	20	43	5.10	865	84,900
Jun-07	6.30	4.00	130	670	113	2.00	27	48	4.00	998	55,400
Jul-07	5.50	3.00	NA	605	102	1.50	24	41	4.30	889	45,400
Aug-07	7.60	2.20	NA	797	43	1.50	15	51	6.00	1070	41,500
Sep-07	7.70	<5	NA	555	98	1.30	18	29	3.00	915	41,300
Oct-07	10.20	<5	NA	586	104	2.40	25	37	<1	879	37,500
Nov-07	7.60	9.60	NA	340	59	1.30	17	64	<1	540	22,000
Dec-07	10.10	<5	NA	598	97	1.70	26	40	<1	789	30,200
Jan-08	8.50	3.00	NA	632	97	1.40	19	28	1.00	36	41,300
Feb-08	8.00	3.40	NA	627	96	1.40	21	28	1.10	942	39,600
Average	6.55	4.02	126	584	104	1.73	22	41	4.20	805	41,247

Notes: 1. Detection levels vary based on solids concentrations.
2. NA indicates not analyzed
3. Detection limit indicated as "less than" (<) values for those parameters not detected during analysis.

WVWA WPCP
VA0025020

Sludge Received from Off Site

Generator	Dry Metric Tons Generated per Year
Blacksburg Country Club WWTP	110.2
Camp Virginia Jaycee, Inc.	2.0
Catawba Hospital	393
Oak Hill Academy WWTP	94.55
Red Oak Manor WWTP	11.35
Roanoke Cement	37.82
Town of Buchanan	1.57
Whites Truck Stop	1.5
Woodhaven Nursing Home	3.65
Total Sludge Generated Off Site	656

Annual Sludge Generation Rate (Roanoke WPCF) (dry metric tons)	5,673

Total Sludge Received and Generated (dry metric tons)	6,329

Attachment R

Public Notice/ Public Notice Comments

PUBLIC NOTICE – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Roanoke City.
PUBLIC COMMENT PERIOD: 30 days following the public notice issue date; comment period ends 4:30 pm of last day
PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board
APPLICANT NAME, ADDRESS, AND PERMIT NUMBER: Western Virginia Water Authority, 1502 Brownlee Avenue, S.E., Roanoke, VA 24014, VA0025020
FACILITY NAME AND LOCATION: Western Virginia Water Authority Water Pollution Control Plant, 1502 Brownlee Avenue, S.E., Roanoke, VA 24014
PROJECT DESCRIPTION: The Western Virginia Water Authority has applied for a reissuance of a permit for the public wastewater treatment plant in Roanoke City. The applicant proposes to release treated sewage wastewater at a rate of 55 million gallons per day from the current facility into a water body with a proposed upgrade to 62 million gallons per day. Storm water will also be released. Sludge from the treatment process will be periodically land applied at agronomic rates to fields located in Franklin and Bedford Counties. Land application shall be in accordance with biosolids permit numbers BUR 79 and BUR 114. Sludge application sites in Franklin County are owned or operated by Mike Altice, William Truman, Gary Dudley, Bill English, Noel Parcell, William Helms, Byron Brooks, Edgar Morris, Brenda Tyree, Van Flora, John Bowman, Glenn Clingenpeel, Ronald Walker, and James Campbell. Sludge application site in Bedford County are owned or operated by W.D. Watson, Winston Robertson, Jackie Preston, and Mark Wagner. The proposed reissuance contains requirements that sewage sludge comply with Cumulative Pollutant Loading Rates for metals, Class B pathogen requirements; and vector reduction requirements. The facility proposes to release the treated sewage and storm water into the Roanoke River in Roanoke City in the Roanoke River Watershed (VAW-L04R). A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: bacteria, nutrients, organic matter, solids, toxic pollutant (ammonia), dissolved oxygen
HOW TO COMMENT: DEQ accepts comments by e-mail, fax, or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for a public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requestor, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. DEQ may hold a public hearing, including another comment period, if a public response is significant and there are substantial, disputed issues relevant to the permit
CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS, AND ADDITIONAL INFORMATION:
NAME: Becky L. France; ADDRESS: Virginia Department of Environmental Quality, Blue Ridge Regional Office, 3019 Peters Creek Road, Roanoke, VA 24019-2738; PHONE: (540) 562-6700; E-MAIL ADDRESS: blfrance@deq.virginia.gov; FAX: (540) 562-6725. The public may review the draft permit and application at the DEQ office named above by appointment.

France,Becky

From: Scott.Shirley@WesternVaWater.org
Sent: Wednesday, February 18, 2009 3:34 PM
To: France,Becky
Subject: RE: Alternate Lagoon Language

Becky,

Based upon the revision to part I.D.14, we are in agreement that this version of the permit is satisfactory. Thanks for all of your work and efforts. Take care.

S. Scott Shirley
Director of Wastewater Operations
Western Virginia Water Authority
Telephone : (540) 853-1283

"France,Becky" <blfrance@deq.virginia.gov>
02/18/2009 01:57 PM

To <Scott.Shirley@WesternVaWater.org>
cc
Subject RE: Alternate Lagoon Language

I have revised Part I.D.14 of the permit.

I agreed with the change in the plan submittal date. I have added a couple of sentences to your proposed language. I added a statement about the plan including criteria for defining inadequacy of the lagoons because I wanted to be sure that the plan defined it. I also added standard language about any new liner for a corrective action plan. Please review the attached revision and let me know it is OK. I will also revise the Fact Sheet references to this special condition.

-----Original Message-----
From: Scott.Shirley@WesternVaWater.org
[mailto:Scott.Shirley@WesternVaWater.org]
Sent: Wednesday, February 18, 2009 9:50 AM
To: France,Becky
Cc: Lawrence Hoffman
Subject: Alternate Lagoon Language

Becky,

This email is to follow up with alternate lagoon language which we believe is more appropriate and reflects more of the original intent of this discussion. As I referenced in the earlier e:mail, our files do include documents which demonstrate the permeability of lagoons 5 and 1 as being 7x10 to the -7. We will continue to research our files to determine whether additional information is available, but the window of this discussion

has been fairly tight. Thanks.

(See attached file: alternate lagoon language.doc)

S. Scott Shirley
Director of Wastewater Operations
Western Virginia Water Authority
Telephone : (540) 853-1283

[attachment "Permit Part I WVWA WWTP 2009 021809 3.doc" deleted by Scott Shirley/WesternVaWater]

France,Becky

From: France,Becky
Sent: Wednesday, February 18, 2009 1:57 PM
To: 'Scott.Shirley@WesternVaWater.org'
Subject: RE: Alternate Lagoon Language

Attachments: Permit Part I WVWA WWTP 2009 021809 3.doc

Permit Part I WVWA WWTP 2009 0...

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To: France,Becky
Cc: Lawrence Hoffman
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(See attached file: alternate lagoon language.doc)

S. Scott Shirley
Director of Wastewater Operations
Western Virginia Water Authority
Telephone : (540) 853-1283

France,Becky

From: France,Becky
Sent: Wednesday, February 18, 2009 9:56 AM
To: Foster,Kip
Subject: FW: Alternate Lagoon Language

Attachments: alternate lagoon language.doc

alternate lagoon language.doc ...

-----Original Message-----
From: Scott.Shirley@WesternVaWater.org [mailto:Scott.Shirley@WesternVaWater.org]
Sent: Wednesday, February 18, 2009 9:50 AM
To: France,Becky
Cc: Lawrence Hoffman
Subject: Alternate Lagoon Language

Becky,

This email is to follow up with alternate lagoon language which we believe is more appropriate and reflects more of the original intent of this discussion. As I referenced in the earlier e:mail, our files do include documents which demonstrate the permeability of lagoons 5 and 1 as being 7x10 to the -7. We will continue to research our files to determine whether additional information is available, but the window of this discussion has been fairly tight. Thanks.

(See attached file: alternate lagoon language.doc)

S. Scott Shirley
Director of Wastewater Operations
Western Virginia Water Authority
Telephone : (540) 853-1283

14. **Watertight Integrity Study and Ground Water Monitoring Plan**

1. By **May 10, 2009**, the permittee shall submit to DEQ, Blue Ridge Regional Office for approval:

(1) A protocol for monitoring ground water quality impacts due to lagoon leakage from each of the five sludge storage lagoons, or

(2) A plan for assessing the watertight integrity of the lining of the five sludge storage lagoons.

2. If the watertight integrity study is chosen, the following requirements shall apply:

(1) Within 400 days of approval of the protocol, the permitee shall submit a report of the results to the DEQ Regional Office.

(2) Should the integrity study indicate a lagoon liner permeability in excess of 10^{-6} cm/sec, the permittee, upon written notification by the Regional Director, shall within 60 days of such notification submit for approval a plan and schedule for corrective action. If the corrective action plan specifies installation of a liner, the liner must exhibit a coefficient of permeability of no more than 10^{-6} cm/sec.

3. If the ground water monitoring program option is selected, then the following requirements shall apply:

(1) Within 60 days of approval of the protocol, the permittee utilizing the approved protocol, shall submit valid ground water monitoring data. Thereafter, the permittee shall submit ground water monitoring data in accordance with the protocol schedule.

(2) Should these ground water monitoring data indicate contamination to ground water, the permittee, upon written notification by the Regional Director, shall within 60 days of such notification submit for approval a plan and schedule for corrective action. If the corrective action plan specifies installation of a liner, the liner must exhibit a coefficient of permeability of no more than 10^{-6} cm/sec.

POSSIBLE DRAFT ALTERNATIVE LANGUAGE

14. **Lagoon Structural Integrity Study**

1. By **July 1, 2009**, the permittee shall submit to DEQ, Blue Ridge Regional Office for approval a protocol for evaluating the structural integrity of the five sludge storage lagoons. This plan shall describe the methods proposed to evaluate the potential for a lagoon failure that could result in the release of sludge.

2. Within 180 days of approval of the protocol, the permittee shall submit to the DEQ a report containing the results of the structural integrity evaluation.

3. Should the results of the evaluation indicate a reasonable potential for a lagoon failure, the report shall include a corrective action plan and a corresponding schedule to address the identified deficiencies in lagoon structural integrity.

15. **Watertight Integrity Study and Ground Water Risk Assessment**

1. By **August 1, 2009**, the permittee shall submit to DEQ, Blue Ridge Regional Office for approval a protocol for assessing the watertight integrity of the lining of the five sludge storage lagoons.

2. Within 400 days of approval of the protocol, the permittee shall submit a report of the results to the DEQ Regional Office.

3. Should the integrity study indicate a lagoon liner permeability in excess of 10^{-6} cm/sec, the permittee, upon written notification by the Regional Director, shall within 60 days of such notification submit for approval a plan and schedule for conducting a ground water risk assessment. This plan shall address the methodology for identifying potential receptors, exposure pathways, exposure levels, and the associated potential risks to receptors. As an alternative, the permittee may submit a protocol for monitoring ground water quality impacts due to lagoon leakage from the sludge storage lagoon location.

4. If the ground water risk assessment option is chosen, the permittee shall submit a report of the results to the DEQ Regional Office within 180 days of approval of the protocol.

5. If the ground water monitoring program option is selected, then the following requirements shall apply:

   (1) Within 90 days of approval of the protocol, the permittee utilizing the approved protocol, shall submit valid ground water monitoring data. Thereafter, the permittee shall submit ground water monitoring data in accordance with the protocol schedule.

   (2) Should these ground water monitoring data indicate contamination to ground water, the permittee, upon written notification by the Regional Director, shall within 60 days of such notification submit for approval either a plan and schedule for corrective action or a plan and schedule for performing a ground water risk assessment.

   (3) If the corrective action plan option is selected and specifies installation of a liner, the liner must exhibit a coefficient of permeability of no more than 10^{-6} cm/sec.

   (4) If the ground water risk assessment option is selected and indicates a risk to the identified receptors, the permittee shall within 60 days of notification by the Regional Director submit for approval a plan and schedule for corrective action.

France,Becky

From: Scott.Shirley@WesternVaWater.org
Sent: Wednesday, February 18, 2009 8:39 AM
To: France,Becky
Subject: Re: WVWA WPCP Permit

Becky,

The language regarding the lagoons still need a fair amount of work. I did find construction files from 1981/1982 for an expansion of lagoon 1 and the construction of lagoon 5. These files include permeability test results for the clay liner. The clay liner permeability was 7 x 10 to the -7, meeting the State requirements. The file also included the approval in the CTC from the State.

We have the original drawings for the remaining lagoons and are actively working to identify additional construction documents. The original construction drawings on the lagoon show a much thicker liner than I would have anticipated.

I will submit some alternate language for consideration by DEQ today.
Thanks.

S. Scott Shirley
Director of Wastewater Operations
Western Virginia Water Authority
Telephone : (540) 853-1283

"France,Becky" <blfrance@deq.virginia.gov>
02/18/2009 08:22 AM

To <Scott.Shirley@WesternVaWater.org>
cc
Subject WVWA WPCP Permit

The public notice comment period for the WVWA WPCP permit ended on February 17, 2009 and comments were received from VAMWA. I am completing a response letter regarding these comments. I have not received any comments from EPA concerning the draft permit.

Is there anything in the permit we need to discuss further?

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Blue Ridge Regional Office
www.deq.virginia.gov

L. Preston Bryant, Jr.
Secretary of Natural Resources

David K. Paylor
Director

Steven A. Dietrich
Regional Director

Lynchburg Office
7705 Timberlake Road
Lynchburg, Virginia 24502
(434) 582-5120
Fax (434) 582-5125

Roanoke Office
3019 Peters Creek Road
Roanoke, Virginia 24019
(540) 562-6700
Fax (540) 562-6725

February 19, 2009

Mr. Frank W. Harksen, Jr.
Virginia Association of Municipal Wastewater Agencies, Inc.
PO Box 51
Richmond, VA 23218-0051

RE: Response to Comments on VPDES Permit Application, WVWA WPCP (VA0025020)
Received February 17, 2009

Dear Mr. Harksen, Jr.:

Thank you for your comments on the draft permit for the WVWA WPCP. Your letter provides several comments as to why the Virginia Association of Municipal Wastewater Agencies (VAMWA) believes the Tier designation for the receiving stream at the WVWA WPCP discharge should be Tier I rather than Tier II. You noted that the BOD/dissolved oxygen allocation given for the 62 MGD facility was designated as fully allocated. The Tier designation of the stream is based upon the existing water quality of the stream from the time the facility was upgraded to 35 MGD. The allocations for the 55 MGD and 62 MGD facilities are designed to prevent any significant lowering of the existing water quality. The allocations in the Water Quality Management Plan are based upon this level of protection.

As noted in your letter, this segment of the Roanoke River is listed on the 303(d) list for PCB and benthic impairments. In accordance with Agency guidance, PCBs found in fish tissue are not used to determine tier designations because they are generally associated with human health impacts rather than a known impact to aquatic life in the water. Total suspended solids is given as the cause of the benthic impairment for the stream segment. The Total Maximum Daily Load allocation increased the facility's allocation for this parameter which was included in a modification during the previous permit term.

Your letter notes the importance of caution in water quality standards evaluations. For Tier designation the state of Virginia has opted to provide a conservative default assumption of Tier II for receiving streams. In the absence of data to indicate otherwise, the receiving stream for the outfall 001 discharge at the WVWA WPCP has been designated as Tier II. If we receive data in the future that does not support these assumptions, we will reevaluate the Tier designation for this facility.

If you need any additional information about this permit, please feel free to call me at (540) 562-6700.

Sincerely,

Becky L. France

Becky L. France
Environmental Engineer Senior

cc: Michelle Ashworth, Aqualaw PLC

France,Becky

From: Ashworth, Michelle [mashworth@aqualaw.com]
Sent: Tuesday, February 17, 2009 3:19 PM
To: Dietrich,Steven; France,Becky
Subject: Comments on Antidegradation Tier Selection - VPDES Permit No. VA0025020
Attachments: VAMWA Comment - Antideg - VA0025020.pdf

On behalf of VAMWA please accept the following comment on the Western VA Water Authority VPDES permit. Thank you.

Michelle Ashworth
Paralegal
AquaLaw PLC
804-716-9021 ext. 7
www.AquaLaw.com

VIRGINIA ASSOCIATION OF MUNICIPAL WASTEWATER AGENCIES, INC.
P.O. Box 51
Richmond, Virginia 23218-0051
Tel (804) 716-9021 • Fax (804) 716-9022

February 17, 2008

By Email and U.S. Mail

Mr. Steve Dietrich
Regional Director
West Central Regional Office
Department of Environmental Quality
3019 Peters Creek Road
Roanoke, Virginia 24019

Ms. Becky L. France
Environmental Engineer Senior
West Central Regional Office
Department of Environmental Quality
3019 Peters Creek Road
Roanoke, Virginia 24019

Re: VPDES Permit No. VA0025020
Comments on Antidegradation Tier Selection

Dear Mr. Dietrich and Ms. France:

On behalf of the Virginia Association of Municipal Wastewater Agencies we wanted to provide the attached brief comments on one particular issue in the reissuance of the VPDES permit for the Western Virginia Water Authority wastewater facility. As you may know, VAMWA is an environmental organization representing 57 Virginia POTW owners/operators, which cover the large majority of the sewered population of Virginia.

The issue that we address is the Department's selection of an Antidegradation tier. This is an important issue to VAMWA's membership, and we ask that you fully consider the comments and select an Antidegradation tier in a manner consistent with current guidance and practice.

As always, we appreciate the Department's efforts in addressing water quality.

Sincerely,

Frank W. Harksen, Jr.
President

Cc: Mike McEvoy
S. Scott Shirley
VAMWA Members

VIRGINIA ASSOCIATION OF MUNICIPAL WASTEWATER AGENCIES

VPDES Permit No. VA0025020
Comments on Selection of Antidegradation Tier

February 17, 2008

VAMWA appreciates the opportunity to submit the following comments on the selection of an Antidegradation tier for VAMWA member Western Virginia Water Authority's permit reissuance. The Fact Sheet identifies the receiving waters as Tier 2, when it appears that Tier 1 is correct under current guidance and procedures.

First, the Fact Sheet on page 13 indicates that, at the 62 mgd design flow, the receiving waters are fully allocated for BOD/dissolved oxygen under the Water Quality Management Plan. This is a standard basis for designating waters as Tier 1.

Second, it appears that the receiving waters are 303(d) listed for both PCBs and benthic impairment. These listings should result in Tier 1 designations. The Department's long-established and long-applied permitting guidance, GM00-2011, provides that Tier 1 designations include those waters where "[d]ata collected from the segment of stream being considered . . . demonstrate that one or more standards are violated or are just barely being met . . . ."

We understand that the data for PCBs and the benthic evaluations indicate impairments. These data are, of course, the basis for the 303(d) listings and for the TMDL processes addressing those listings. Therefore, the listings should result in a Tier 1 designation. We recognize that Department memoranda from 2005 discussed a possible exception where a Tier 1 determination would not be made based solely on fish consumption advisories. However, where a consumption advisory has resulted in a 303(d) listing, that advice would not apply in any event. We also note that, to our knowledge, the comments about consumption advisories and the other 2005 comments have not been incorporated into permitting guidance. We also note that no reasoned basis was stated for the consumption advisory and other exceptions that might have had the effect of Tier 2 designations in some waters that would historically be considered Tier 1.

Finally, the Fact Sheet addresses mercury and concludes that the existing data may not reliably show standards exceedances. We have not fully considered the data to which the Fact Sheet refers. We do not necessarily disagree with the Department's evaluation of the mercury data clean sampling and total mercury/methyl mercury issues the Fact Sheet raises. However, we would expect the Department and the Regional Office to use similar degrees of caution in other water quality standards evaluations where imperfect data may tend to adversely impact permittees.

As you know, the Department committed to the State Water Control Board at its October, 2008 quarterly meeting that a Stakeholders Group will be convened to address Tier designations, and to address whether the Commonwealth should change to a pollutant-by-pollutnt approach. Particularly in light of the work of the expected Stakeholders Group, the Department should not in individual permit cases attempt to vary from the long-established designation guidance. In a case like this, where there are relevant 303(d) listings in the receiving waters, it appears clear that the accepted Tier designation approach results in a Tier 1 designation. We urge the Department to review this issue again, and to correctly designate these waters in the Fact Sheet as Tier 1.

France,Becky

From: France,Becky
Sent: Thursday, February 12, 2009 2:17 PM
To: 'Martin.Sensabaugh@WesternVaWater.org'; 'Lawrence Hoffman'
Subject: FW: Special Condition 14- VPDES Permit VA0025020
Attachments: Permit Part I WVWA WWTP 2009 021209.doc; Fact Sheet WVWA WPCP 2009 021209.doc

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From: France,Becky
Sent: Thursday, February 12, 2009 2:16 PM
To: 'Scott.Shirley@WesternVaWater.org'
Subject: RE: Special Condition 14- VPDES Permit VA0025020

I have reviewed your special condition language and spoken with ground water monitoring staff regarding lagoon integrity assessments. In your example, the water balance and the documentation options are tied to the 10^{-6} cm/s standard. The language given in the special condition you provided describes methodology for determining that the permeability of the lagoon liner is acceptable. I have some concerns as to whether a water balance would work given the open lagoons and decanting. But, I would like to leave the study protocol open for further evaluation. I have modified the special condition to allow more flexibility of options. I have used some of the standard language so that the permittee can do ground water monitoring as an option. I have taken out the requirement for ground water monitoring if an integrity study is done and the permeability is not acceptable. In this case a corrective action plan would be required. I have also changed the due date for the integrity study to within a certain timeframe from the approval of the plan rather than a specific date to allow time to make any needed changes in the study plan before proceeding. I have also revised the special condition rationale in the Fact Sheet.

You indicated that you wanted a more general reopener clause. By not specifying the type of study plan, I feel there is a little more flexibility than the language in your e-mail. The Authority would be required to submit a plan for approval by DEQ and that can be discussed prior to the submission date. I have changed the due date for the integrity study so that the timeframe starts with approval of the plan. Of course WVWA has the option of completing the study plan and the study/monitoring sooner and I would encourage that approach.

I checked on the source of the special condition language regarding plumes and found that it was taken from the standard language in DEQ Guidance Memorandum 98-2010 (Attachment V-1). This language is more typically added when contamination may be a problem. Since an assessment has not occurred, I have deleted it.

I hope the changes to the Part I.D.14 special condition provide enough flexibility to assess the lagoons and ensure that the ground water and surface water are protected. Please review the attached Fact Sheet and permit changes and let me know if there is anything that needs more work.

-----Original Message-----
From: Scott.Shirley@WesternVaWater.org [mailto:Scott.Shirley@WesternVaWater.org]
Sent: Wednesday, February 11, 2009 1:51 PM
To: France,Becky
Cc: Martin.Sensabaugh@WesternVaWater.org; Lawrence Hoffman

Subject: Special Condition 14- VPDES Permit VA0025020

Becky,

I hope that you are doing well. After further review and discussion regarding the addition of special condition 14 to our permit, this item has proved o be extremely problematic. Part of the challenge is that the language as drafted does not fit with the permit guidance language for which this condition is being applied. Also, the language regarding plumes, etc. appears to be from either the UST or another program and likely is not applicable to wastewater lagoon structures.

The following is the specific section of the permit guidance language we have identified :

(Use the following special condition to demonstrate the integrity of a lagoon liner; suspect leaking lagoon)

1. Within 60 days after the [effective/modification] date of this permit, the permittee shall submit to the DEQ [Regional Office] for approval:
   a. a protocol for establishing a valid water balance for the earthen lagoon, or
   b. a protocol for monitoring ground water quality impacts due to lagoon leakage, or
   c. documentation that the lagoon's permeability is not greater than 10-6 cm/sec.
2. If the water balance option is selected, then the following requirements shall apply:
   a. Within 60 days after the approval of the protocol, the permittee, utilizing the approved protocol, shall submit a valid monthly water balance for this facility.
   Thereafter, the permittee shall submit a valid water balance monthly for 12 consecutive months, due by the tenth of each month for the previous month's performance.
   b. Should any monthly water balance indicate lagoon liner permeability in excess of 10-6 cm/sec, the permittee, upon written notification by the Regional Director, shall within 60 days of such notification submit for approval a plan and schedule for corrective action. If the corrective action plan specifies installation of a liner, the liner must exhibit a coefficient of permeability of no more than 10-6 cm/sec.
3. If the ground water monitoring program option is selected, then the following requirements shall apply:
   a. Within 60 days of approval of the protocol, the permittee, utilizing the approved protocol, shall submit valid ground water monitoring data. Thereafter, the permittee shall submit ground water monitoring data in accordance with the protocol schedule.
   b. Should this ground water monitoring data indicate contamination to

ground water, the permittee, upon written notification by the Regional Director, shall
within 60 days of such notification submit for approval a plan and schedule for corrective action. If the corrective action plan specifies installation of a liner, the liner must exhibit a coefficient of permeability of no more than 10-6 cm/sec.

We believe that this is a complicated issue which warranted a much greater notice period and the late introduction of this is very problematic in terms of being able to complete an appropriate review and offer meaningful comments. Specifically, we would be open to a discussion about a more general re-opener clause which would allow both WCRO and the Authority to work through the appropriate language for inclusion into the permit. Use of typical re-opener language would be acceptable. The current language is not acceptable.

As previously discussed, the Authority is voluntarily moving forward with plans to complete a geotechnical study to confirm the structural integrity and strength of the berms which will be shared with WCRO voluntarily. We look forward to working with you to quickly resolve this matter.

S. Scott Shirley
Director of Wastewater Operations
Western Virginia Water Authority
Telephone : (540) 853-1283

France,Becky

From: Scott.Shirley@WesternVaWater.org
Sent: Wednesday, February 11, 2009 1:51 PM
To: France,Becky
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   b. Should this ground water monitoring data indicate contamination to ground water, the permittee, upon written notification by the Regional Director, shall within 60 days of such notification submit for approval a plan

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S. Scott Shirley
Director of Wastewater Operations
Western Virginia Water Authority
Telephone : (540) 853-1283

France,Becky

From: France,Becky
Sent: Monday, February 02, 2009 4:20 PM
To: 'Lawrence Hoffman'
Subject: RE: WVWA TKN/NH3
Attachments: ammonia TKN comparison 2008 final revised 012109.xls; WVWA WPCP AMMONIA STATS OUTPUTS.pdf; MSTRANTI (draft k) WVWA WPCP 55 MGD acute metals.xls; MSTRANTI (draft k) WVWA WPCP 62 MGD acute metals.xls

I was also a little surprised that the 62 MGD calculation for the weekly average TKN needed to slightly lower for January, February, and March (from 5.0 mg/L to 4.9 mg/L). It is correct that the lower the frequency for the proposed limit calculation the less stringent the limits tend to be. The existing monthly average TKN limits during that same period noted above for the 62 MGD facility were OK and did not need to be modified. I think I may have not seen it earlier when I prepared the first draft because the monthly average was OK.

I have attached a copy of the spreadsheet comparison and STATS outputs. The AWLA spreadsheets have not changed from the first draft. If there is something overlooked or you need more information, please let me know.

From: Lawrence Hoffman [mailto:lhoffman@olver.com]
Sent: Monday, February 02, 2009 1:05 PM
To: France,Becky
Cc: Scott.Shirley@WesternVaWater.org
Subject: RE: WVWA TKN/NH3

Hi Becky,

Thanks for forwarding the TKN tier information. Based on your comments below, I believe I understand how you determined the new TKN tier limits but I was a little surprised / confused on the need to reduce the 62 MGD TKN weekly average numbers. I realize it is a minor reduction, but was hoping you could send me the fact sheet and associated calculations information for that limit (it helps me to review the methodology/calculations). Based on the earlier drafts, I did not think the existing TKN limits would be changed. Thanks,

Lawrence

From: France,Becky [mailto:blfrance@deq.virginia.gov]
Sent: Wednesday, January 28, 2009 4:44 PM
To: Lawrence Hoffman; Scott.Shirley@WesternVaWater.org
Subject: RE: WVWA TKN/NH3

I have attached the changes to outfall 001. The TKN limits have three tiers and there is a four year compliance schedule for the more stringent TKN limitations. The TKN loadings have been adjusted to reflect the changes in the concentration values. The TKN limitations were made more stringent during the October through December months for the 55 MGD and 62 MGD facilities. Also, the weekly average limitations for the TKN limitations for the 62 MGD were made slightly more stringent during the January through March time frame (concentration limit changed from 5.0 mg/L to 4.9 mg/L adjusted accordingly). Let me know if there is anything about these limits that have missed especially given the number of changes made.

Previously I attempted to find a more specific screening tool to relate TKN and ammonia concentrations for this facility. General WEF influent ratios may not be reflective of the effluent TKN to ammonia ratios expected. I examined data from a wastewater

treatment facility which had secondary treatment and did see a consistent relationship between ammonia and TKN. However, the ratio of ammonia to TKN was usually lower than 60% ammonia to TKN. So, I concluded that using a 60% influent ratio of ammonia to TKN was not clearly a good estimate of effluent ammonia concentration. Three ammonia and TKN data points were available with the application but since most of the data were below quantification levels a ratio could not be established. For a ratio to be determined both values must be quantified. Also, three data points were not sufficient to account for any variability. Since I was not able to determine a ratio, I decided to again use the screening values given in Guidance Memorandum 00-2011 to define the TKN limits needed for the permit. Note that the screening values (TKN-3.0 mg/L) are not actual TKN concentrations. I feel that these screening values are not overly conservative and represent a need for more stringent limits during the months defined above. I apologize for not discussing this information with you earlier. When I reevaluated the frequency ammonia limit and maximum ammonia concentration, I began to question assumptions for TKN and I failed to work it all out before talking with you again.

I will be sending you a revised draft permit and we can go over the comments and make sure everything has been addressed.

I have received some comments from our compliance staff. I recently received a copy of their lagoon inspection report. The compliance staff expressed concerns about the integrity of the sludge lagoons and has recommended a watertight integrity study. It was also recommended that in the event that an alternative disinfection method is used, E. coli testing be increased to 1/day. Given the fact that the receiving stream has a TMDL and daily disinfection compliance tracking is desired, I believe this is an appropriate inclusion in the permit.

From: Lawrence Hoffman [mailto:lhoffman@olver.com]
Sent: Wednesday, January 28, 2009 8:39 AM
To: France,Becky
Cc: 'Scott.Shirley@WesternVaWater.org'
Subject: WVWA TKN/NH3

Good Morning Becky,

I hope you are doing well. I wanted to follow-up on our recent conversation and my follow-up e-mail regarding the three seasonal TKN tier option as an alternative to the proposed ammonia limit for the WVWA draft permit and see if you had a chance to look at that further and perhaps prepare new draft limits pages wit ht eh new tier for review by the Authority. I realize that you wanted to get this resolved quickly so we can proceed to the public comment period. If we can assist in any manner or if you need additional information or if we need to discuss this further, please let me know. Thanks,

Lawrence

R. Lawrence Hoffman
Director of Environmental Services
Olver Incorporated
1116 South Main Street
Blacksburg, VA 24060
Phone (540) 552-5548
Fax (540) 552-5577

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France,Becky

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Sent: Wednesday, January 28, 2009 8:39 AM
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R. Lawrence Hoffman
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France,Becky

From: France,Becky
Sent: Thursday, January 22, 2009 7:59 AM
To: 'SMITH, RON'
Subject: RE: VPDES Permit VA0025020

The public notice should have included only Franklin and Bedford County for land application. The application does not indicate that land application will take place in Botetourt County. I have revised the public notice and sent the changes to the newspaper for the January 23 publication date. I am not sure the change has been made in time to appear in the paper corrected, but I sent it to them yesterday afternoon.

From: SMITH, RON [mailto:rsmith@BOTETOURTVA.US]
Sent: Wednesday, January 21, 2009 5:30 PM
To: France,Becky
Subject: VPDES Permit VA0025020

Ms. France:

Botetourt County has received the notice for the reissuance of the VPDES permit for the Western Virginia Water Authority Plant. The public notice states that sludge will be applied in Franklin and Botetourt Counties, but Franklin and Bedford County farms are listed as application sites. Are there no application locations in Botetourt County? Please advise.

Thanks

Ron Smith
Public Works Manager
Botetourt County

France,Becky

From: SMITH, RON [rsmith@BOTETOURTVA.US]
Sent: Wednesday, January 21, 2009 5:30 PM
To: France,Becky
Subject: VPDES Permit VA0025020

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Thanks

Ron Smith
Public Works Manager
Botetourt County

France,Becky

From: Lawrence Hoffman [lhoffman@olver.com]
Sent: Tuesday, January 20, 2009 4:06 PM
To: France,Becky
Cc: 'Scott.Shirley@WesternVaWater.org'
Subject: Alternative Ammonia Evaluation Option

Hi Becky,

As a follow-up to our phone conversation, I am providing an alternative ammonia limit evaluation approach based on effluent data from this facility rather than using "assumed" data or relationships.

There are limited ammonia and TKN data available since the upgrade was completed and this will be a better indication of effluent ammonia than the raw influent percentage. We collected 3 effluent samples for ammonia as part of the application preparation. I understand from the fact sheet that all TKN data since the upgrade is less than QL (<1 mg/L). If we assume conservatively that the <QL data for ammonia is 0.1 mg/L instead of <0.1 for those events and assume that the TKN is 1 mg/L instead of <1 mg/L, the corresponding ammonia percentage of TKN is 17%:

Permit App Data

Date	NH3	TKN	% NH3
4/30/2008	0.31	1*	31%
5/22/2008	0.1*	1*	10%
6/24/2008	0.1*	1*	10%
*Adjusted to QL (actual data is <QL)		Average	17%

The actual effluent ratio of 17% could be used instead of assumed 60% based on an influent ratio to determine if the existing TKN limits "control" for ammonia. The consistency in the effluent TKN indicates that the treatment process is consistent (particularly for nitrogen) and the available data could be used to characterize the effluent.

Please let us know if you have any questions or concerns using this approach. Thanks,

Lawrence

R. Lawrence Hoffman
Director of Environmental Services
Olver Incorporated
1116 South Main Street
Blacksburg, VA 24060
Phone (540) 552-5548
Fax (540) 552-5577

France,Becky

From: France,Becky
Sent: Tuesday, January 20, 2009 3:26 PM
To: 'Scott.Shirley@WesternVaWater.org'
Subject: RE: Additional Permit Comments

I am sorry to take so long to answer your comments. I have been out of the office since Friday (state holiday).

I am in the process of recalculating the ammonia limits. For the purposes of comparing the TKN to ammonia limits, I am reverting back to the Agency Guidance regarding assuming 3.0 mg/L of TKN is refractory nitrogen. I found a WEF reference document indicating as much as 60% of a "typical" municipal influent may be ammonia. But, I have not found consistent data to provide a more precise relationship between TKN and ammonia, so I am deferring to our Agency guidance. Given the low TKN limits, the 3.0 mg/L assumption is not being used as an actual ammonia value but rather a method of comparing the ammonia and TKN limits to determine if the TKN limit may be considered reasonably stringent without an ammonia limit.

I apologize for not working through all of my new assumptions prior to discussing what I thought would be the changes. After talking with you concerning the new frequency and addition of an ammonia limit for two additional months I found the 60% reference above and I recalculated the need for an ammonia limit for 10 months.

Please be reassured that we can address these concerns during the public notice period. I need to work through the STATS program calculations again with the 3/week frequency so that I can give you the correct limits. I anticipate the limits will be effective during only a few months of the year. I will have the changes to you soon. The wording of the public notice remains correct so there are no problems there.

-----Original Message-----
From: Scott.Shirley@WesternVaWater.org [mailto:Scott.Shirley@WesternVaWater.org]
Sent: Friday, January 16, 2009 9:46 AM
To: France,Becky
Cc: Lawrence Hoffman; Martin.Sensabaugh@WesternVaWater.org
Subject: RE: Additional Permit Comments

Becky,

After the initial review of the revised permit, we have a significant problem with the revised ammonia. In our telephone conversation, I had understood that the revisions would include an extension of the permit limit by a couple of months and we anticipated seeing a 5 month period in combination with the lowered monitoring frequency. The revised permit reflects an extension of the limit to a 10 month monitoring period.

As I mentioned in the e:mail yesterday, we received late input from VAMWA regarding Ammonia. Based upon conversations with various other utilities, we have been told that DEQ has typically dropped ammonia limits when a TKN limit of 4.5 mg/l weekly, 3.0 mg/l monthly is included on the assumption that these TKN levels equate to basically zero ammonia. I still think this is the first item we should address.

In the event that the previous Agency approach is not utilized, the suggested reduction in monitoring frequency combined with an extension of the limit to 10 months is not acceptable. The original monitoring period and frequency would be preferable to this approach. Thanks.

S. Scott Shirley
Director of Wastewater Operations

Western Virginia Water Au[illegible]rity
Telephone : (540) 853-1283

"France,Becky"
<blfrance@deq.virginia.gov>

01/16/2009 07:01 AM

To <Scott.Shirley@WesternVaWater.org>
cc "Lawrence Hoffman" <lhoffman@olver.com>
Subject RE: Additional Permit Comments

I have revised the Fact Sheet, Permit, Attachment C, Attachment M, and Attachment N. I have posted a complete copy of the permit, Fact Sheet, and attachments on the FTP drive. The documents are found at the following site:

ftp://ftp.deq.virginia.gov/wps

The pdf files are in the Permits/WCRO/VA0024020/011509 Revisions\

I will follow-up with a second e-mail of response to your comments. I just wanted to make sure you received the changes I made to the draft today. If you have any further comments let me know and we can also respond to any additional comments you have during the public notice period.

-----Original Message-----
From: Scott.Shirley@WesternVaWater.org
[mailto:Scott.Shirley@WesternVaWater.org]
Sent: Thursday, January 15, 2009 7:36 AM
To: France,Becky
Subject: Additional Permit Comments

Becky,

My apologies for a later notification, but the tight time frames always make it challenging to find everything in the draft permits and turn it back around to you quickly. I think that the following comments are fairly minor and simply involve areas where it appears that some of our existing language and items are different than DEQ guidance and language used in other permits, so hopefully they fall into the category of editorial changes. The comments are as follows:

The CBOD limit and QL should be in whole numbers. The limit should be stated as 5 and 8 mg/l. The DEQ guidance on significant digits acknowledges that BOD/CBOD analyses report values without decimals.

Under the sewage sludge limitations and monitoring, the fact sheet states that the biosolids are classified as being regulated under the cumulative loading rates. It is my understanding that the language being used in other permits contains monthly average concentration limits along with the maximum (ceiling) concentration limits. The cumulative loading only applies if you exceed the ceiling limits and therefore must track the amount of biosolids land applied on a particular field forever. I understand that

other facilities report m. .hly averages instead of tracki. cumulative totals which will require a DMR report for each field.
I think that while our language may be somewhat confusing, the way the program has functioned in the past (based on input from WCRO) has been consistent with the rest of the State. Apparently the language is somewhat different in other permits to reflect this approach though.

Special Conditions Part I.D.10 requires that Attachment A be used for reporting the data. We would request that this requirement be deleted.
Attachment A is not a good vehicle for reporting as it does not allow for reporting the sample date, analysis date, etc.

Footnote 2 of Attachment A lists a "special composite". This requirement has been discussed by VAMWA and DEQ with the result that it will no longer be included in permits. Fred Cunningham of DEQ was on this team and can help explain the agreement.

Thanks again for all of your help.

S. Scott Shirley
Director of Wastewater Operations
Western Virginia Water Authority
Telephone : (540) 853-1283

Attachment S

EPA Checksheet

Revised 2/2003

State "FY2003 Transmittal Checklist" to Assist in Targeting Municipal and Industrial Individual NPDES Draft Permits for Review

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name: WVWA WPCP

NPDES Permit Number: VA0025020

Permit Writer Name: Becky L. France

Date: 10/28/08

Major [X] **Minor [ ]** **Industrial [ ]** **Municipal [X]**

I.A. Draft Permit Package Submittal Includes:	Yes	No	N/A
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?	X		
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?	X		
8. Whole Effluent Toxicity Test summary and analysis?/	X		
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics	Yes	No	N/A
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet **or** permit contain a description of the wastewater treatment process?	X		

I.B. Permit/Facility Characteristics – cont. (FY2003)	Yes	No	N/A
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit? under consent order	X		
5. Has there been any change in streamflow characteristics since the last permit was developed?	X		
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet **or** permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?	X		
a. Has a TMDL been developed and approved by EPA for the impaired water?	X		
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			X
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water? E. coli	X		
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?	X		
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production? design capacity upgrade	X		
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?	X		
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?	X		
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?			X
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist (FY2003)

Region III NPDES Permit Quality Checklist – for POTWs

(To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?			X

II.C. Technology-Based Effluent Limits (POTWs)	Yes	No	N/A
1. Does the permit contain numeric limits for ALL of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL? E. coli	X		

II.D. Water Quality-Based Effluent Limits – cont. (FY2003)	Yes	No	N/A
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?	X		
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?			X
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?	X		
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			X
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		X	
4. Does the permit require testing for Whole Effluent Toxicity?	X		

II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	X		
2. Does the permit include appropriate storm water program requirements?			X

II.F. Special Conditions – cont. (FY2003)	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?	X		
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?			X
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?			X
a. Does the permit require implementation of the "Nine Minimum Controls"?			X
b. Does the permit require development and implementation of a "Long Term Control Plan"?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?	X		

II.G. Standard Conditions	Yes	No	N/A
1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		

List of Standard Conditions – 40 CFR 122.41

Duty to comply
Duty to reapply
Need to halt or reduce activity not a defense
Duty to mitigate
Proper O & M
Permit actions
Property rights
Duty to provide information
Inspections and entry
Monitoring and records
Signatory requirement
Bypass
Upset
Reporting Requirements
Planned change
Anticipated noncompliance
Transfers
Monitoring reports
Compliance schedules
24-Hour reporting
Other non-compliance

2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?	X		

Part II. NPDES Draft Permit Checklist (FY2003)

Region III NPDES Permit Quality Review Checklist – For Non-Municipals

(To be completed and included in the record for all non-POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet **or** permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?			
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?			

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?			
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?			

II.C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ)	Yes	No	N/A
1. Is the facility subject to a national effluent limitations guideline (ELG)?			
a. If yes, does the record adequately document the categorization process, including an evaluation of whether the facility is a new source or an existing source?			
b. If no, does the record indicate that a technology-based analysis based on Best Professional Judgement (BPJ) was used for all pollutants of concern discharged at treatable concentrations?			
2. For all limits developed based on BPJ, does the record indicate that the limits are consistent with the criteria established at 40 CFR 125.3(d)?			
3. Does the fact sheet adequately document the calculations used to develop both ELG and /or BPJ technology-based effluent limits?			
4. For all limits that are based on production or flow, does the record indicate that the calculations are based on a "reasonable measure of ACTUAL production" for the facility (not design)?			
5. Does the permit contain "tiered" limits that reflect projected increases in production or flow?			
a. If yes, does the permit require the facility to notify the permitting authority when alternate levels of production or flow are attained?			
6. Are technology-based permit limits expressed in appropriate units of measure (e.g., concentration, mass, SU)?			

II.C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ) – cont.	Yes	No	N/A
7. Are all technology-based limits expressed in terms of both maximum daily, weekly average, and/or monthly average limits?			
8. Are any final limits less stringent than required by applicable effluent limitations guidelines or BPJ?			

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?			
2. Does the record indicate that any WQBELs were derived from a completed and EPA approved TMDL?			
3. Does the fact sheet provide effluent characteristics for each outfall?			
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?			
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?			
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?			
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?			
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations where data are available)?			
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?			
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?			
6. For all final WQBELs, are BOTH long-term (e.g., average monthly) AND short-term (e.g., maximum daily, weekly average, instantaneous) effluent limits established?			
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?			
8. Does the fact sheet indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?			

II.E. Monitoring and Reporting Requirements (FY2003)	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters?			
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?			
3. Does the permit require testing for Whole Effluent Toxicity in accordance with the State's standard practices?			

II.F. Special Conditions	Yes	No	N/A
1. Does the permit require development and implementation of a Best Management Practices (BMP) plan or site-specific BMPs?			
a. If yes, does the permit adequately incorporate and require compliance with the BMPs?			
2. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			
3. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?			

II.G. Standard Conditions	Yes	No	N/A
1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?			

List of Standard Conditions – 40 CFR 122.41

Duty to comply
Duty to reapply
Need to halt or reduce activity not a defense
Duty to mitigate
Proper O & M
Permit actions

Property rights
Duty to provide information
Inspections and entry
Monitoring and records
Signatory requirement
Bypass
Upset

Reporting Requirements
- Planned change
- Anticipated noncompliance
- Transfers
- Monitoring reports
- Compliance schedules
- 24-Hour reporting
- Other non-compliance

2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for existing non-municipal dischargers regarding pollutant notification levels [40 CFR 122.42(a)]?			

Part III. Signature Page (FY2003)

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	Becky L. France
Title	Environmental Engineer Senior
Signature	Becky L France
Date	10/28/08